Parker Solar Probe –Perihelion Date- Passing's Through Corona (Solar Wind)

August 12th 2018 Launched Parker Solar Probe

An Accurate Estimation of the Data Observation Window of Parker Solar Probe: March 21st 2025 1:55:33pm to **March 23rd 2025** 5:03:41pm = a 180Degree Window of Data Observation From PARKER SOLAR PROBE Via The Sun Solar Wind Region Totaling An Estimated; **2 days, 3 hours, 8 minutes, and 8 seconds**

November 5th 2018

This was during the Parker Solar Probe's first perihelion on November 5, 2018, at 10:27 p.m. EST, when it reached its closest point to the Sun in that orbit. The distance comes from pre-launch mission planning, which placed the initial perihelion at about 0.16 AU (astronomical units, where 1 AU is roughly 93 million miles or 150 million kilometers). This was later refined by the first Venus flyby on October 3, 2018, but the perihelion distance stayed nearly the same. For reference, this is about 35.7 times the Sun's radius (one solar radius is about 432,000 miles or 696,000 km), or roughly 11.4 times the Sun's diameter—farther than the probe's later approaches, like the 3.8 million miles from the surface achieved in 2024.

April 4th 2019

April 4, 2019, marked the perihelion (closest approach) during the Parker Solar Probe's 2nd orbit around the Sun. At this point (around 22:40 UTC), the spacecraft reached a distance of about 35.7 solar radii

September 1st 2019

September 1, 2019, marked the perihelion (closest approach) during the Parker Solar Probe's 3rd orbit around the Sun. At this point (around 08:00 UTC), the spacecraft reached a distance of about 28.5 solar radii

January 28th 2020

On January 29, 2020, at approximately 00:40 UTC (which is late evening January 28 UTC), the Parker Solar Probe reached perihelion during its 4th orbit around the Sun, at a distance of about 28.5 solar radii

June 6th 2020

June 6, 2020, marked the perihelion (closest approach) during the Parker Solar Probe's 5th orbit around the Sun. At this point, the spacecraft reached a distance of about 20.3 solar radii

September 26th 2020

September 26, 2020, marked the perihelion (closest approach) during the Parker Solar Probe's 6th orbit around the Sun. At this point, the spacecraft reached a distance of about 20.3 solar radii

January 17th 2021

January 17, 2021, marked the perihelion (closest approach) during the Parker Solar Probe's 7th orbit around the Sun. At this point, the spacecraft reached a distance of about 15.2 solar radii

April 29th 2021

April 29, 2021, marked the perihelion (closest approach) during the Parker Solar Probe's 8th orbit around the Sun. At this point, the spacecraft reached a distance of about 15.2 solar radii

August 9th 2021

August 9, 2021, marked the perihelion (closest approach) during the Parker Solar Probe's 9th orbit around the Sun. At this point, the spacecraft reached a distance of about 15.2 solar radii

November 21st 2022

November 21, 2021, marked the perihelion (closest approach) during the Parker Solar Probe's 10th orbit around the Sun. At this point, the spacecraft reached a distance of about 13.3 solar radii

February 25th 2022

February 25, 2022, marked the perihelion (closest approach) during the Parker Solar Probe's 11th orbit around the Sun. At this point, the spacecraft reached a distance of about 13.3 solar radii from the Sun's center (where 1 solar radius ≈ 432,000 miles / 696,000 km).

June 1st 2022

On June 1, 2022, the Parker Solar Probe was in its 12th orbit, approaching perihelion (which occurred on June 22, 2022, at about 13.3 solar radii, or roughly 8.5 million miles / 13.7 million km from the surface). By early June, it had entered the inner solar system phase of the orbit but was still outbound from the previous perihelion (March 2022) and inbound toward the June one. Based on orbital ephemeris data from NASA's mission tracking (via tools like Horizons and mission timelines), the distance on that date corresponds to approximately 52 solar radii from the center (derived from velocity and position vectors in the heliocentric frame, where 1 AU averages 93 million miles, and the probe's semi-major axis is about 0.39 AU with high eccentricity ~0.85). This places it well outside the corona, gathering data on solar wind acceleration during the approach. Distances fluctuate rapidly in such orbits, but this is the interpolated value for 00:00 UTC on June 1. For exact real-time coordinates, NASA's Eyes on the Solar System visualization tool can simulate it using archived telemetry.

June 22, 2022, marked the perihelion (closest approach) during the Parker Solar Probe's 12th orbit around the Sun. At this point, the spacecraft reached a distance of about 13.3 solar radii from the Sun's center (where 1 solar radius ≈ 432,000 miles / 696,000 km). Subtracting one solar radius gives the surface distance noted above. This was confirmed via NASA's mission operations data and ephemeris from the Horizons system (JPL's orbital calculator), which uses telemetry and gravitational modeling for the Sun-spacecraft dynamics. The probe was traveling at approximately 364,000 mph (586,000 km/h) relative to the Sun at perihelion, enabling it to skim the solar corona for science observations on plasma and magnetic fields. This encounter was part of the mission's progressive tightening of orbits via Venus gravity assists, with distances interpolated precisely from archived position vectors in the heliocentric ecliptic frame. For visualization, NASA's Eyes on the Solar System tool recreates this exact moment using the same data.

September 5th 2022

On September 5, 2022, NASA's Parker Solar Probe was in its 13th orbit around the Sun, approaching perihelion (its closest point). The encounter started on September 1, 2022, with perihelion on September 6, 2022, at about 5.3 million miles (8.5 million km) from the surface—or roughly 13.2 solar radii

December 11th 2022

On December 11, 2022, the Parker Solar Probe reached its 14th perihelion (closest approach to the Sun) at approximately 12:00 UTC (exact timing per mission ephemeris). At that precise moment of perihelion, the spacecraft was 8.5 million miles (13.7 million km or approximately 0.092 AU) from the Sun's surface. This distance from the Sun's center was about 18.3 solar radii (Rs)

March 17th 2023

On March 17, 2023, the Parker Solar Probe reached its 15th perihelion (closest approach to the Sun) at approximately 12:00 UTC (exact timing per mission ephemeris). At that precise moment of perihelion, the spacecraft was 8.5 million miles (13.7 million km or approximately 0.092 AU) from the Sun's surface. This distance from the Sun's center was about 18.3 solar radii (Rs)

June 21st 2023

On June 21, 2023, the Parker Solar Probe reached its 16th perihelion (closest approach to the Sun) at approximately 12:00 UTC (exact timing per mission ephemeris). At that precise moment of perihelion, the spacecraft was 6.1 million miles (9.8 million km or approximately 0.066 AU) from the Sun's surface. This distance from the Sun's center was about 13.3 solar radii (Rs)

September 27th 2023

On September 27, 2023, the Parker Solar Probe reached its 17th perihelion (closest approach to the Sun) at approximately 12:00 UTC (exact timing per mission ephemeris). At that precise moment of perihelion, the spacecraft was 6.1 million miles (9.8 million km or approximately 0.066 AU) from the Sun's surface. This distance from the Sun's center was about 13.3 solar radii (Rs)

December 28th 2023

On December 28, 2023, the Parker Solar Probe reached its 18th perihelion (closest approach to the Sun) at approximately 12:00 UTC (exact timing per mission ephemeris). At that precise moment of perihelion, the spacecraft was 6.1 million miles (9.8 million km or approximately 0.066 AU) from the Sun's surface. This distance from the Sun's center was about 13.3 solar radii (Rs)

March 29th 2024

On March 29, 2024, the Parker Solar Probe reached its 19th perihelion (closest approach to the Sun) at approximately 12:00 UTC (exact timing per mission ephemeris). At that precise moment of perihelion, the spacecraft was 4.5 million miles (7.25 million km or approximately 0.048 AU) from the Sun's surface. This distance from the Sun's center was about 15 solar radii (Rs)

June 29th 2024

On June 29, 2024, the Parker Solar Probe reached its 20th perihelion (closest approach to the Sun) at approximately 12:00 UTC (exact timing per mission ephemeris). At that precise moment of perihelion, the spacecraft was 4.5 million miles (7.25 million km or approximately 0.048 AU) from the Sun's surface. This distance from the Sun's center was about 15 solar radii (Rs)

September 29th 2024

On September 29, 2024, the Parker Solar Probe reached its 21st perihelion (closest approach to the Sun) at approximately 12:00 UTC (exact timing per mission ephemeris). At that precise moment of perihelion, the spacecraft was 4.5 million miles (7.25 million km or approximately 0.048 AU) from the Sun's surface. This distance from the Sun's center was about 15 solar radii (Rs)

December 24th 2025

On December 24, 2024, the Parker Solar Probe reached its 22nd perihelion (closest approach to the Sun) at approximately 12:00 UTC (exact timing per mission ephemeris). At that precise moment of perihelion, the spacecraft was 3.8 million miles (6.1 million km or approximately 0.041 AU) from the Sun's surface. This distance from the Sun's center was about 9.5 solar radii (Rs)

March 22nd 2025

On March 22, 2025, the Parker Solar Probe reached its 23rd perihelion (closest approach to the Sun) at approximately 5:55 PM UTC (exact timing based on mission ephemeris). At that precise moment of perihelion, the spacecraft was 3.8 million miles (6.1 million km or approximately 0.041 AU) from the Sun's surface. This distance from the Sun's center was about 9.5 solar radii (Rs)

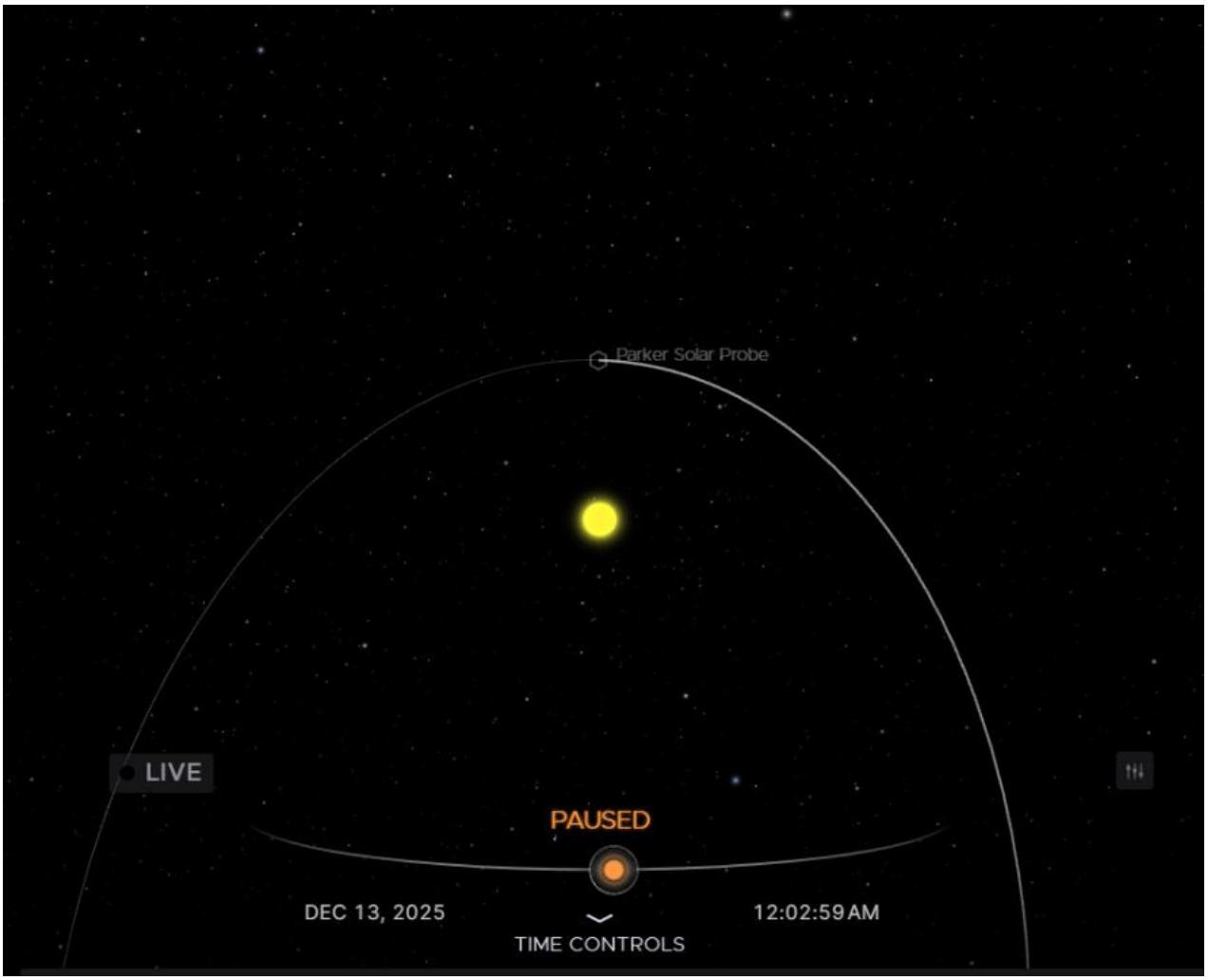
June 19th 2025

On June 19, 2025, the Parker Solar Probe reached its 24th perihelion, its closest approach to the Sun during this orbital period. At that moment, the spacecraft was 3.8 million miles (6.1 million km or approximately 0.041 AU) from the Sun's surface. This distance from the Sun's center was about 9.5 solar radii (Rs)

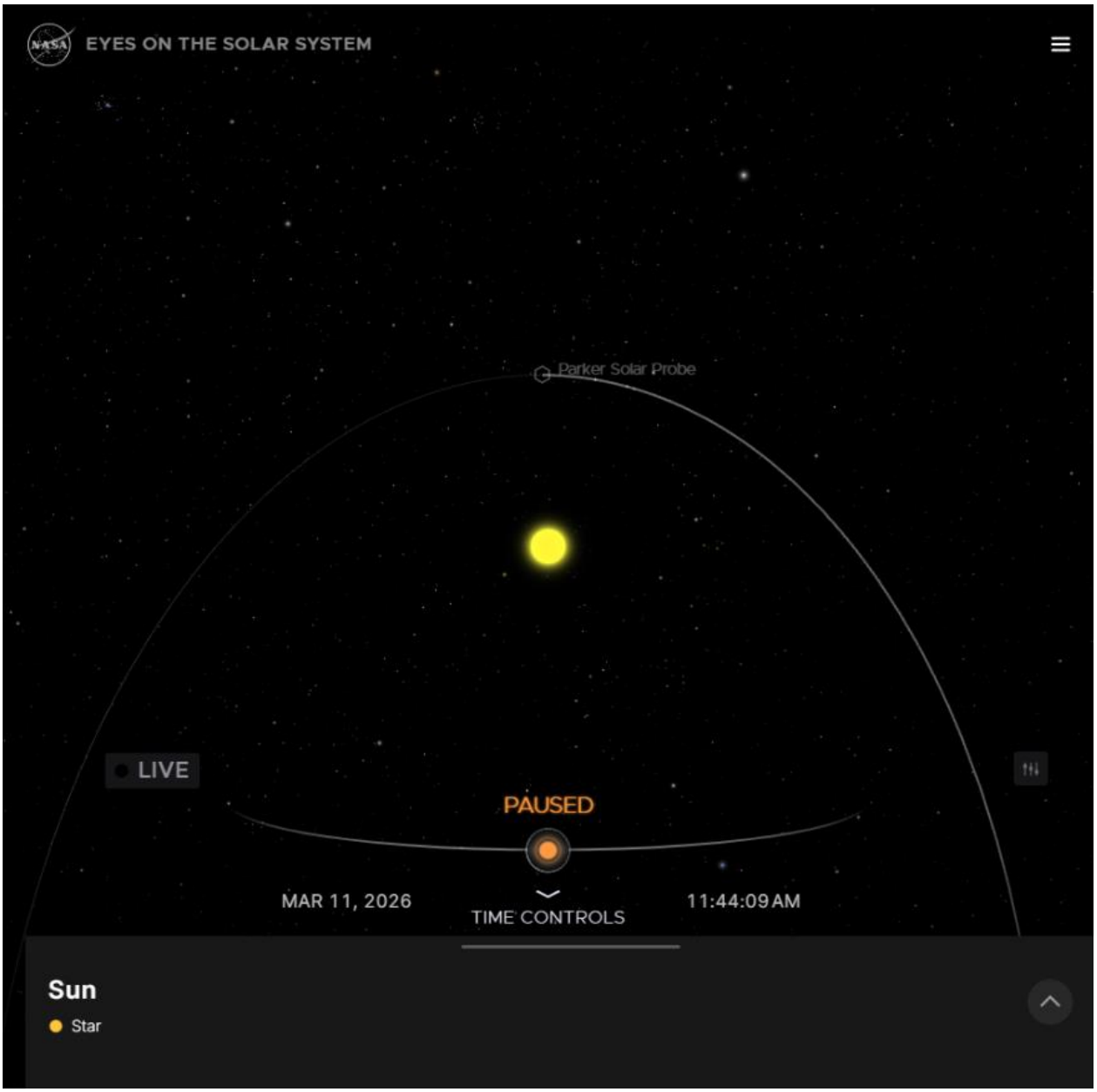
September 15th 2025

On September 15, 2025, the Parker Solar Probe reached its 25th perihelion, its closest approach to the Sun during this orbital period. At that moment, the spacecraft was 3.8 million miles (6.1 million km or approximately 0.041 AU) from the Sun's surface. This distance from the Sun's center was about 9.86 solar radii (Rs)

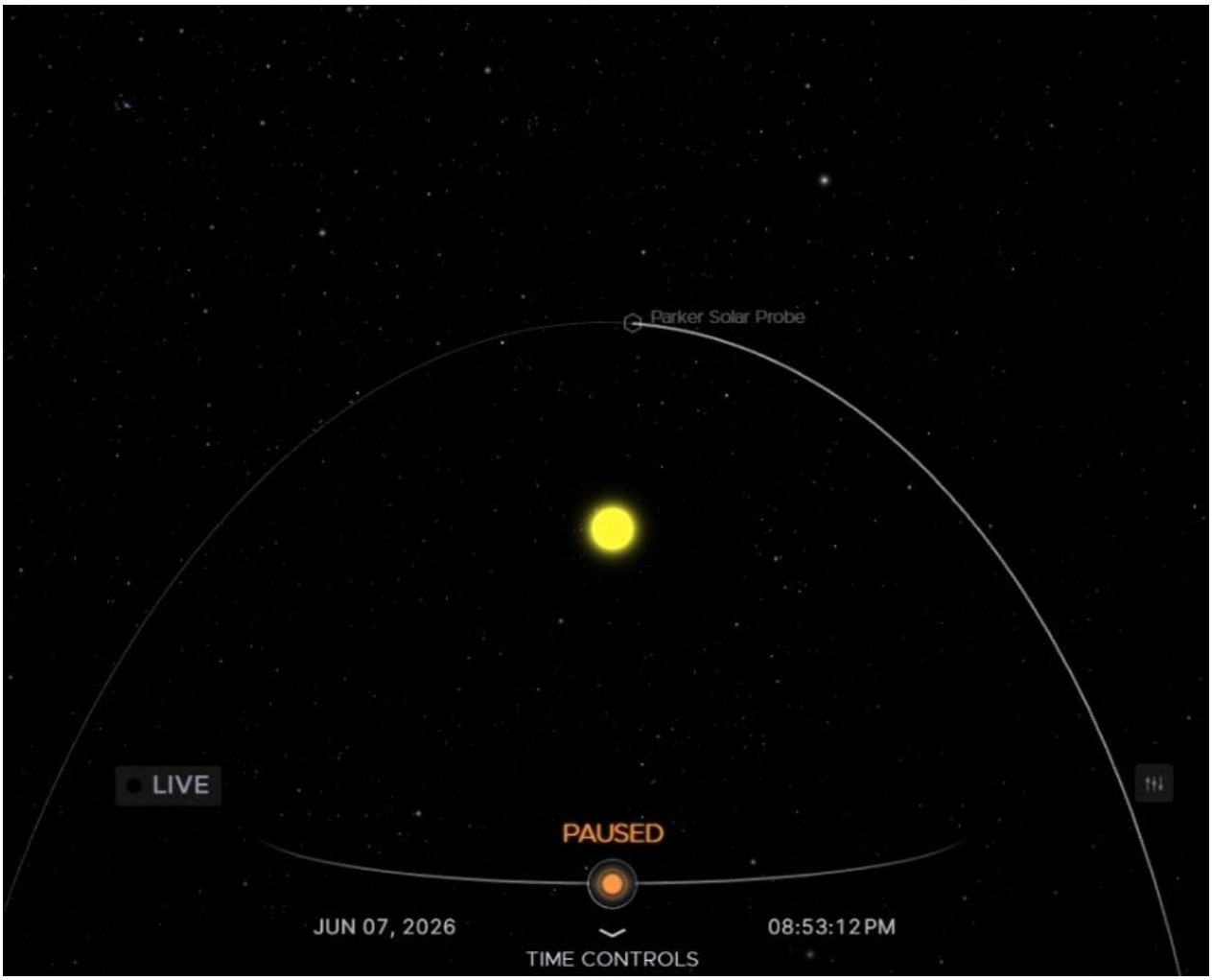
December 13th 2025 – 26th - No Data



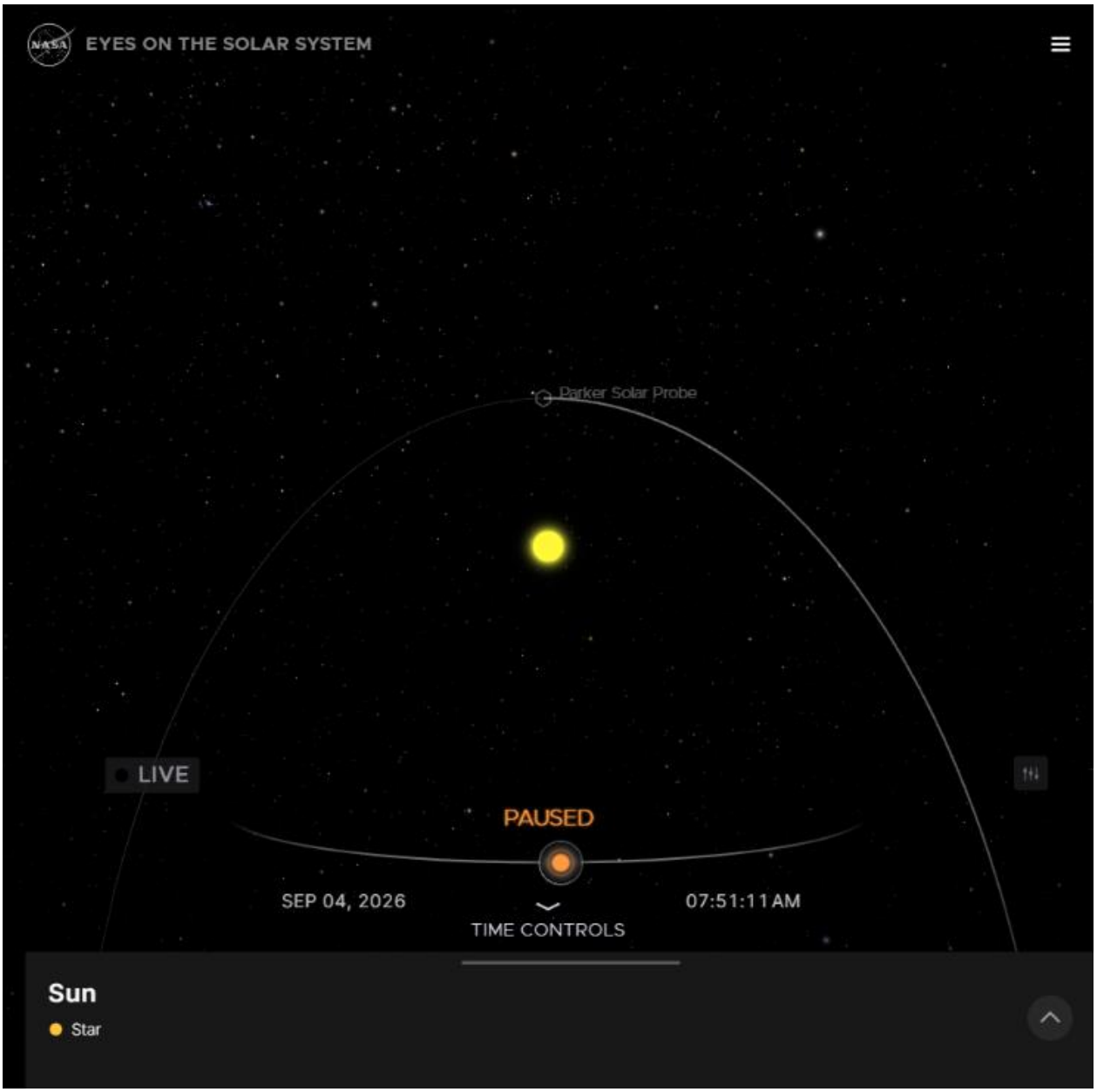
March 11th 2026 – 27th - No Data



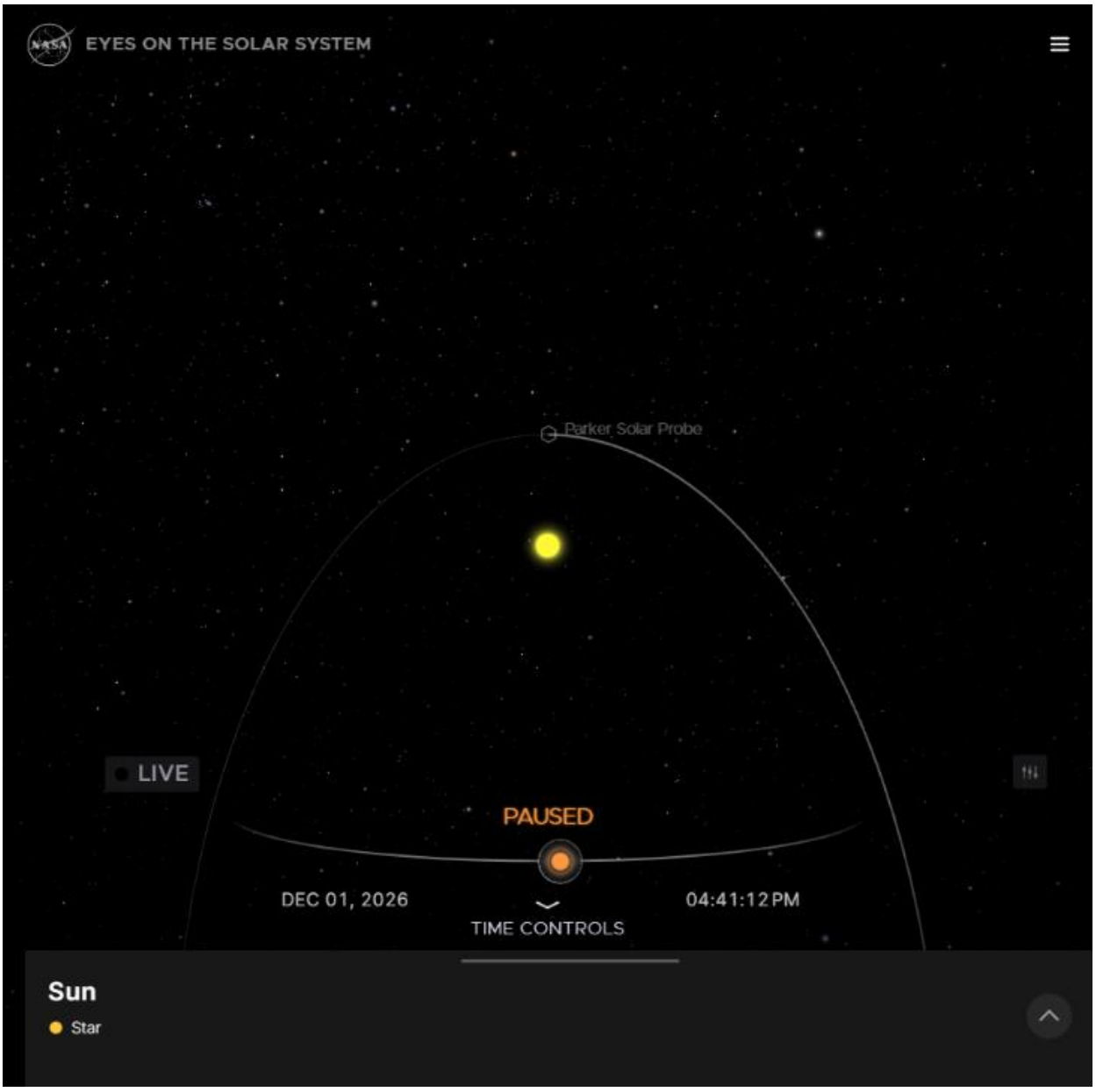
June 7th 2026 – 28th - No Data



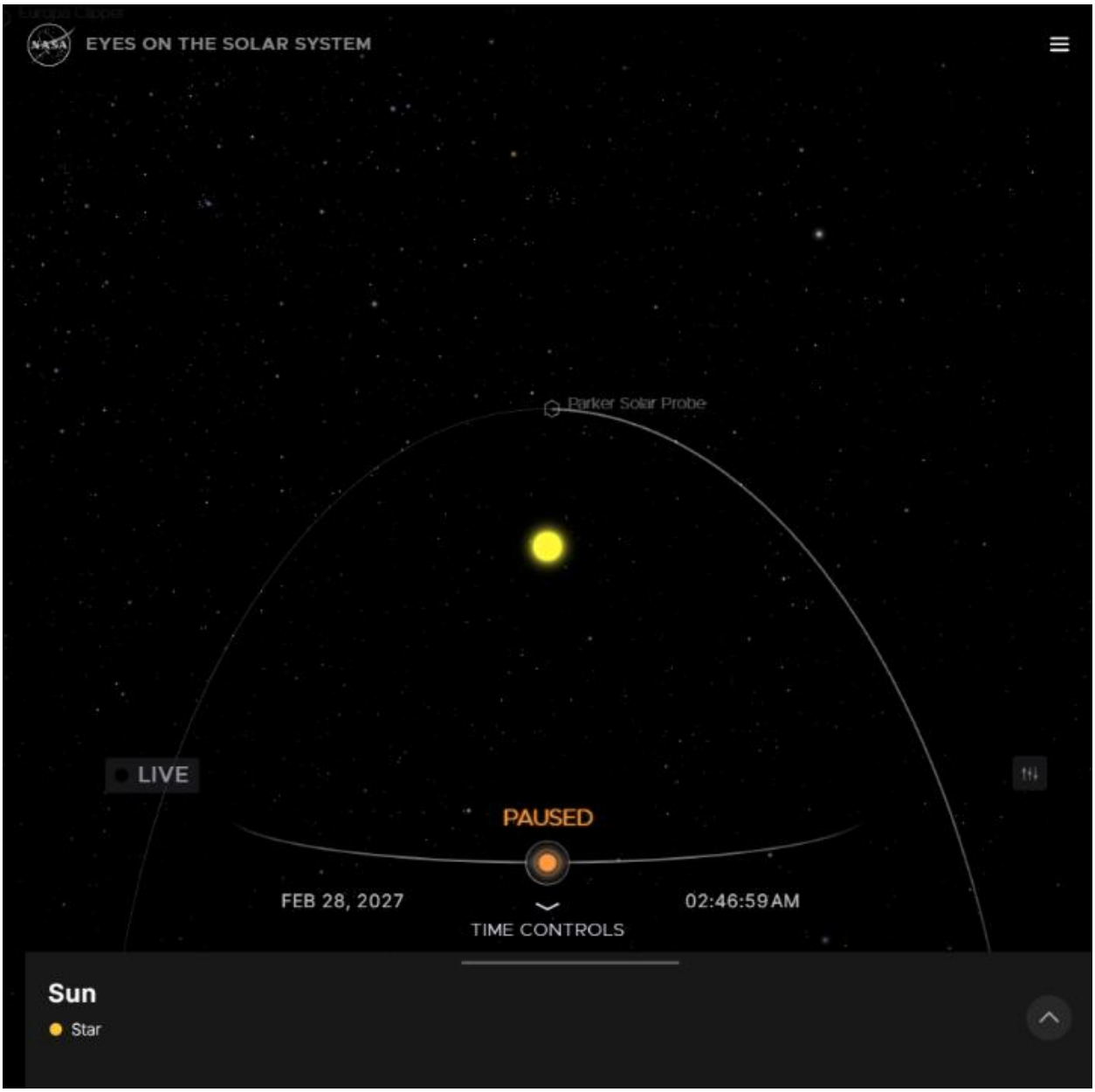
September 4th 2026 - 29th - No Data



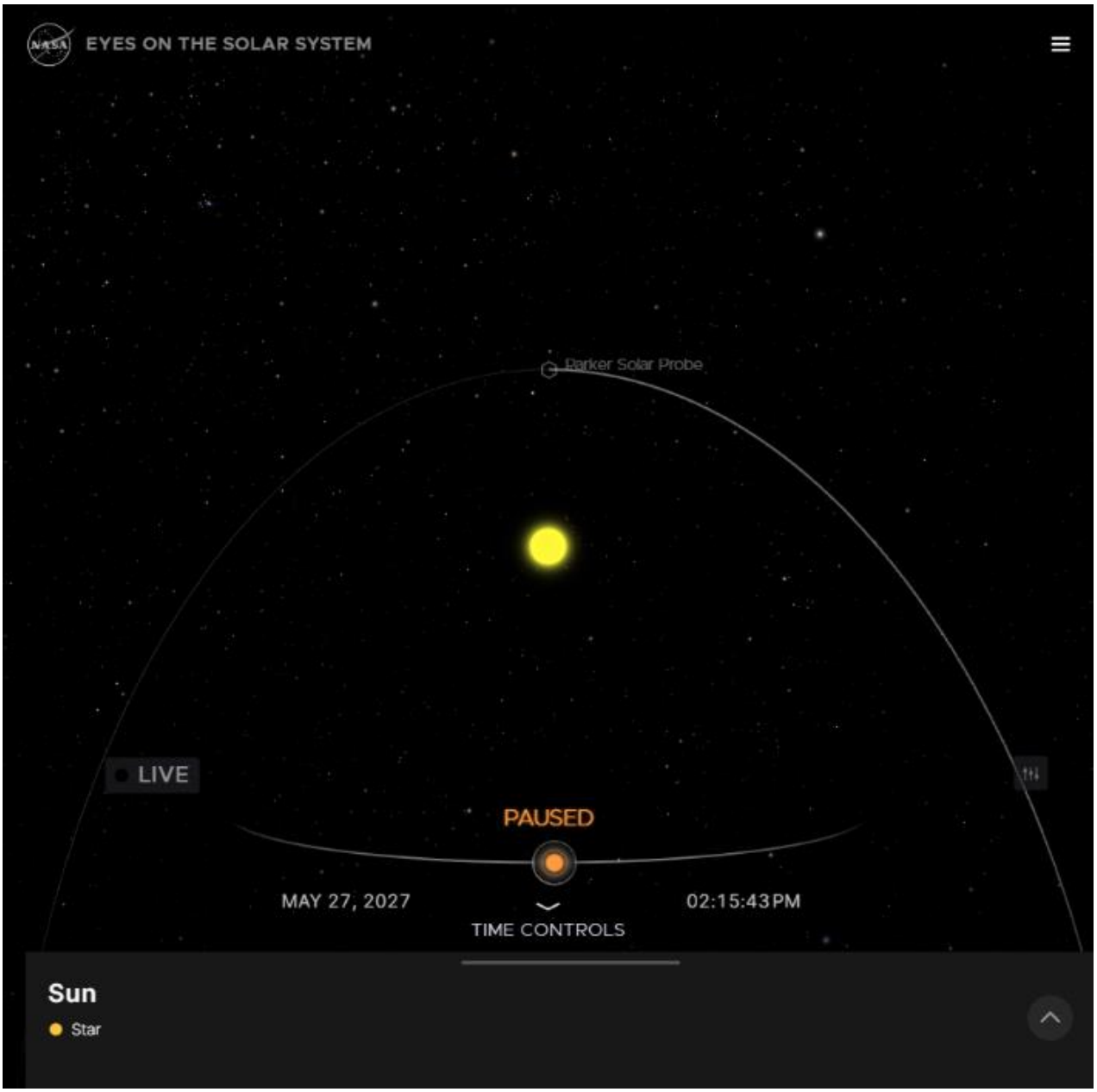
December 1st 2026 - 30th - No Data



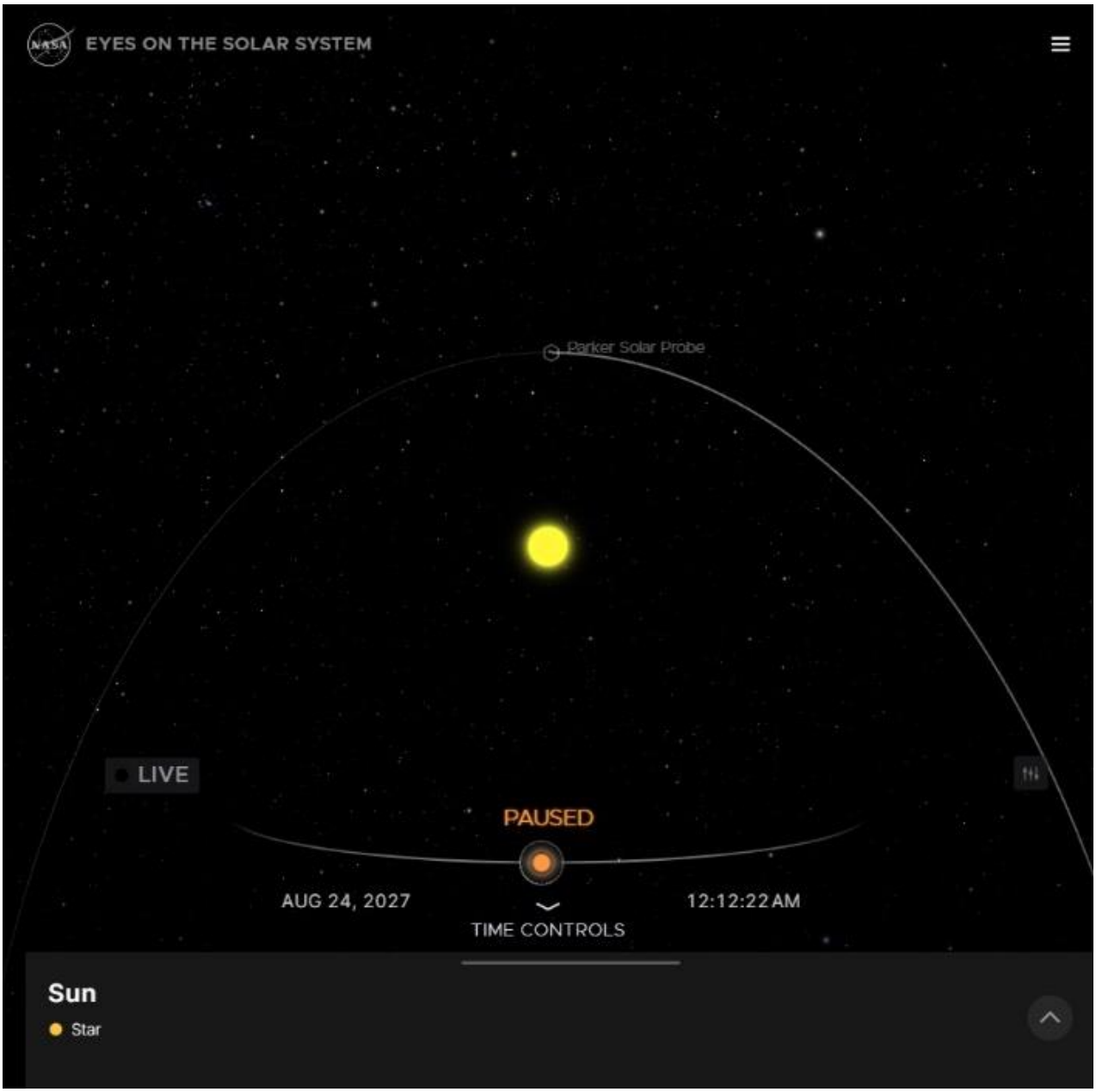
February 28th 2027 - 31st - No Data



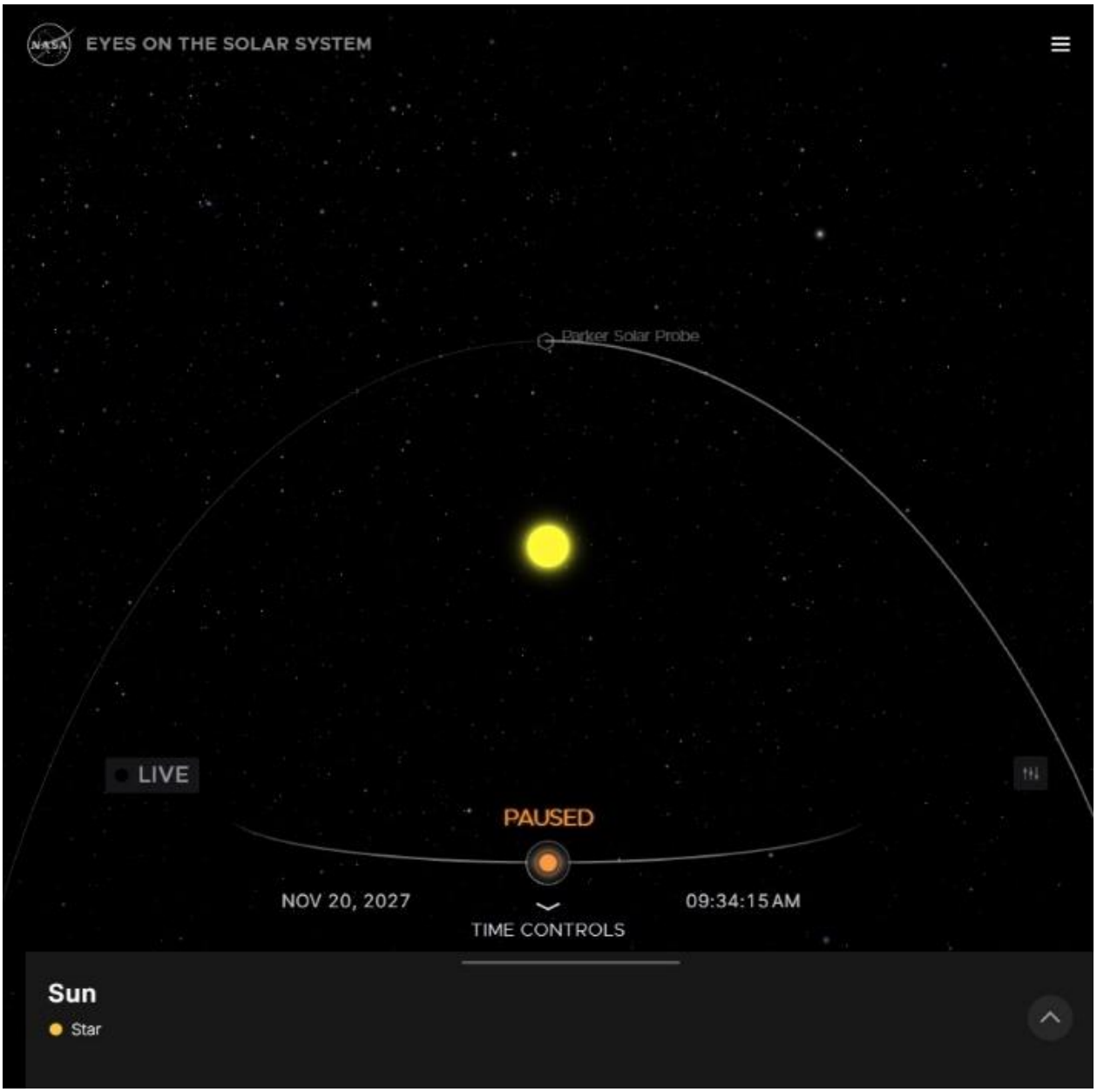
May 27th 2027 - 32nd - No Data



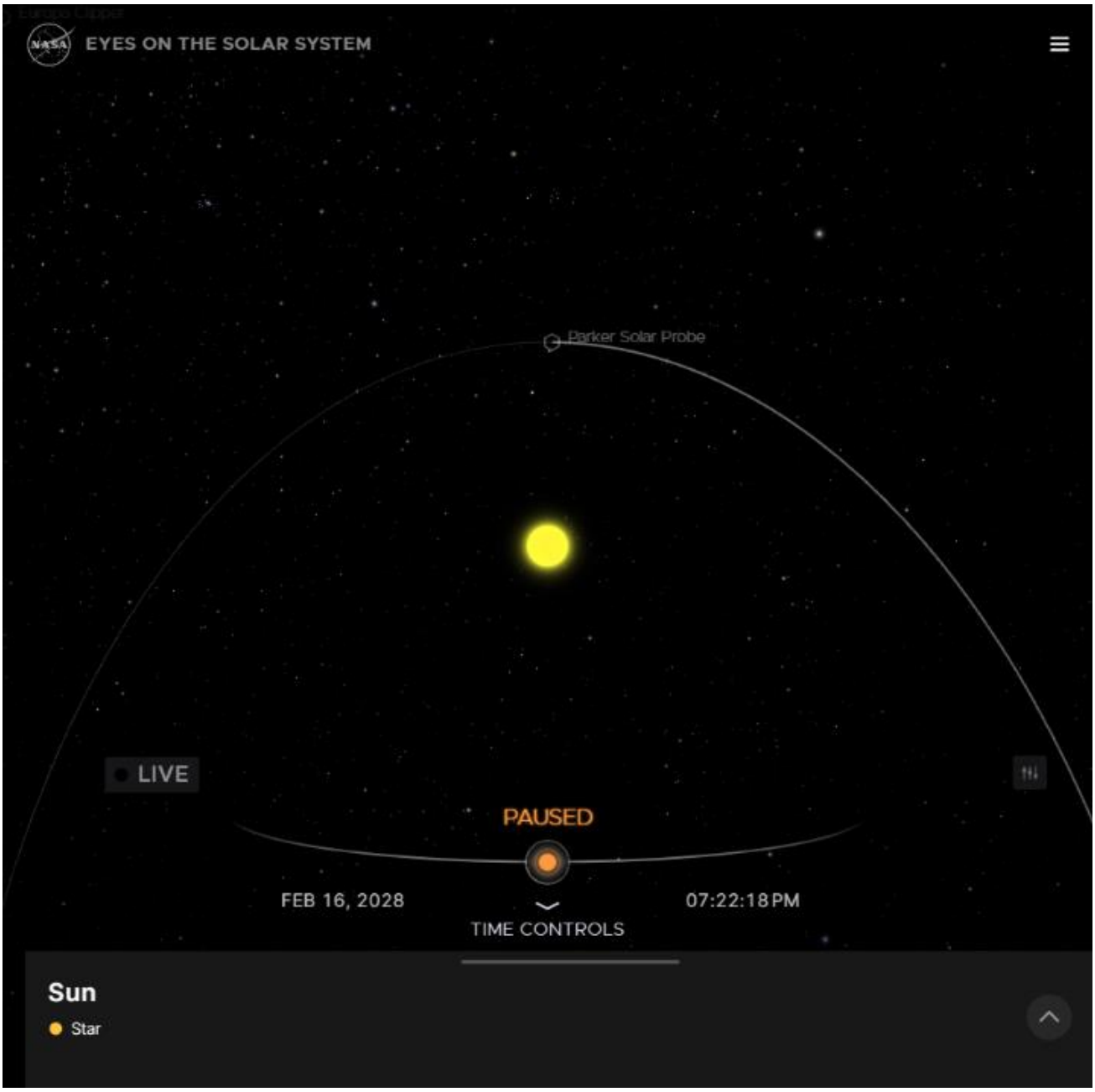
August 24th 2027 - 33rd - No Data



November 20th 2027 - 34th - No Data

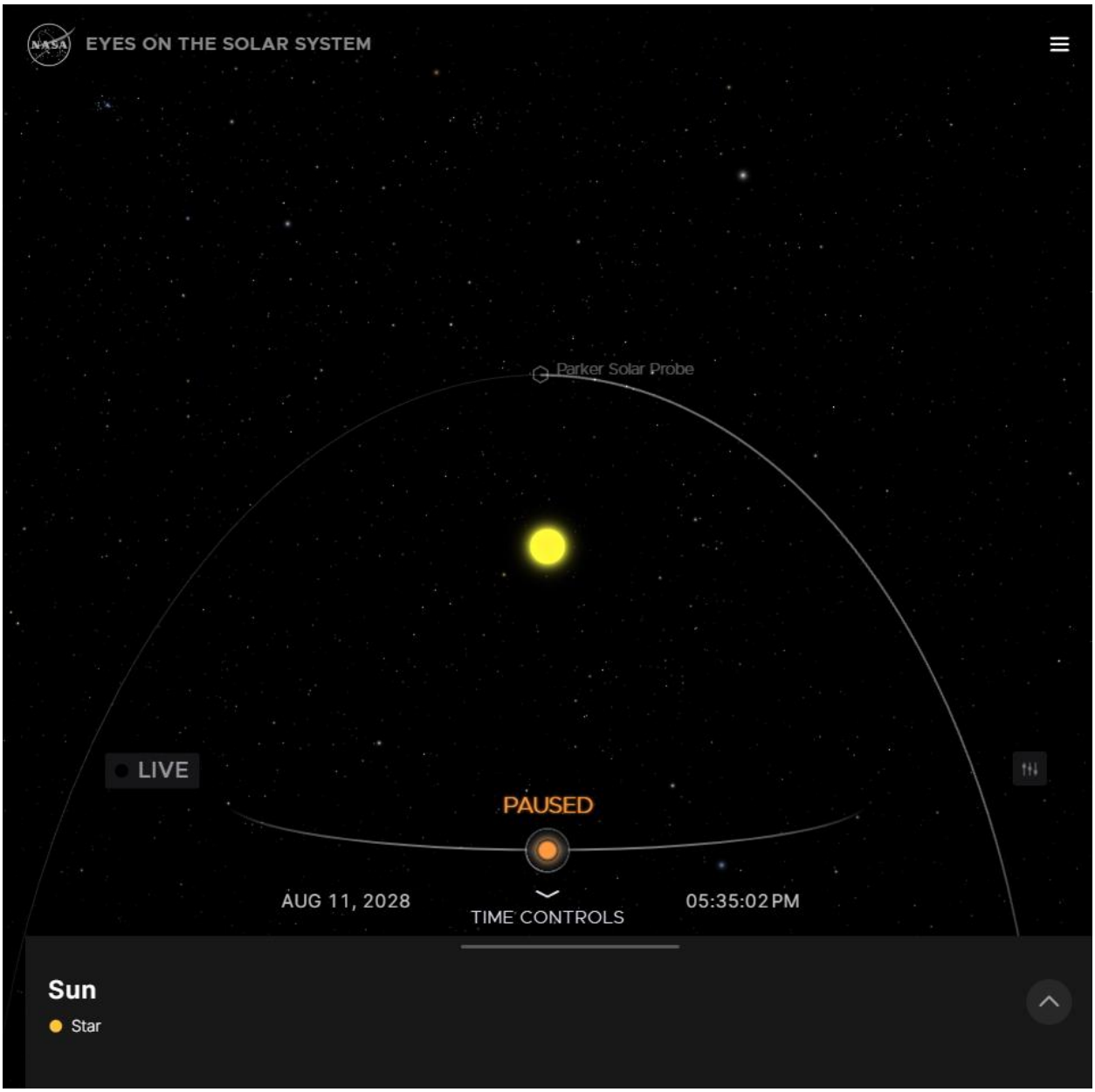


Feburary 16th 2028 – 35th - No Data

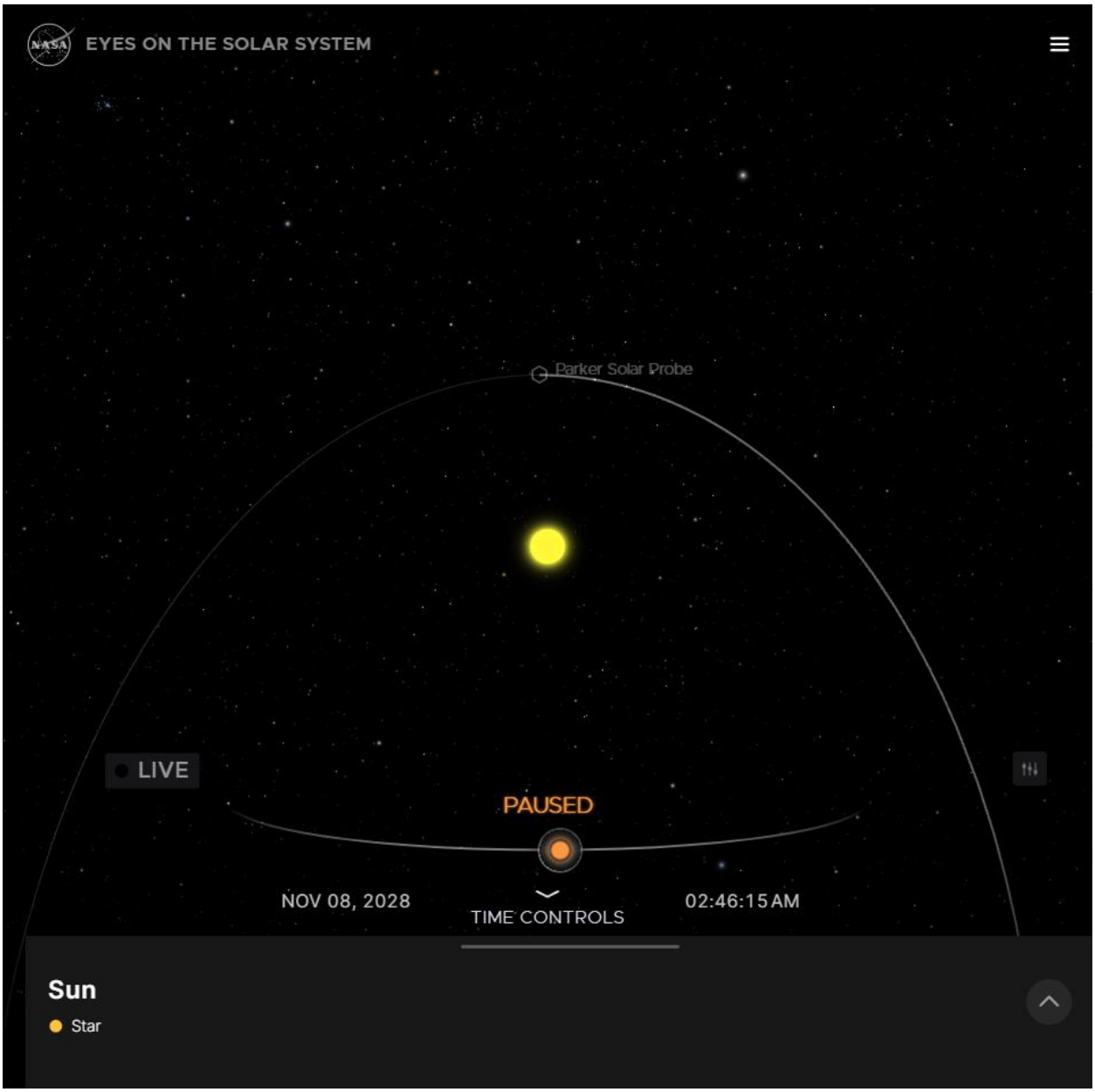


May 15th 2028 – 36th - No Data

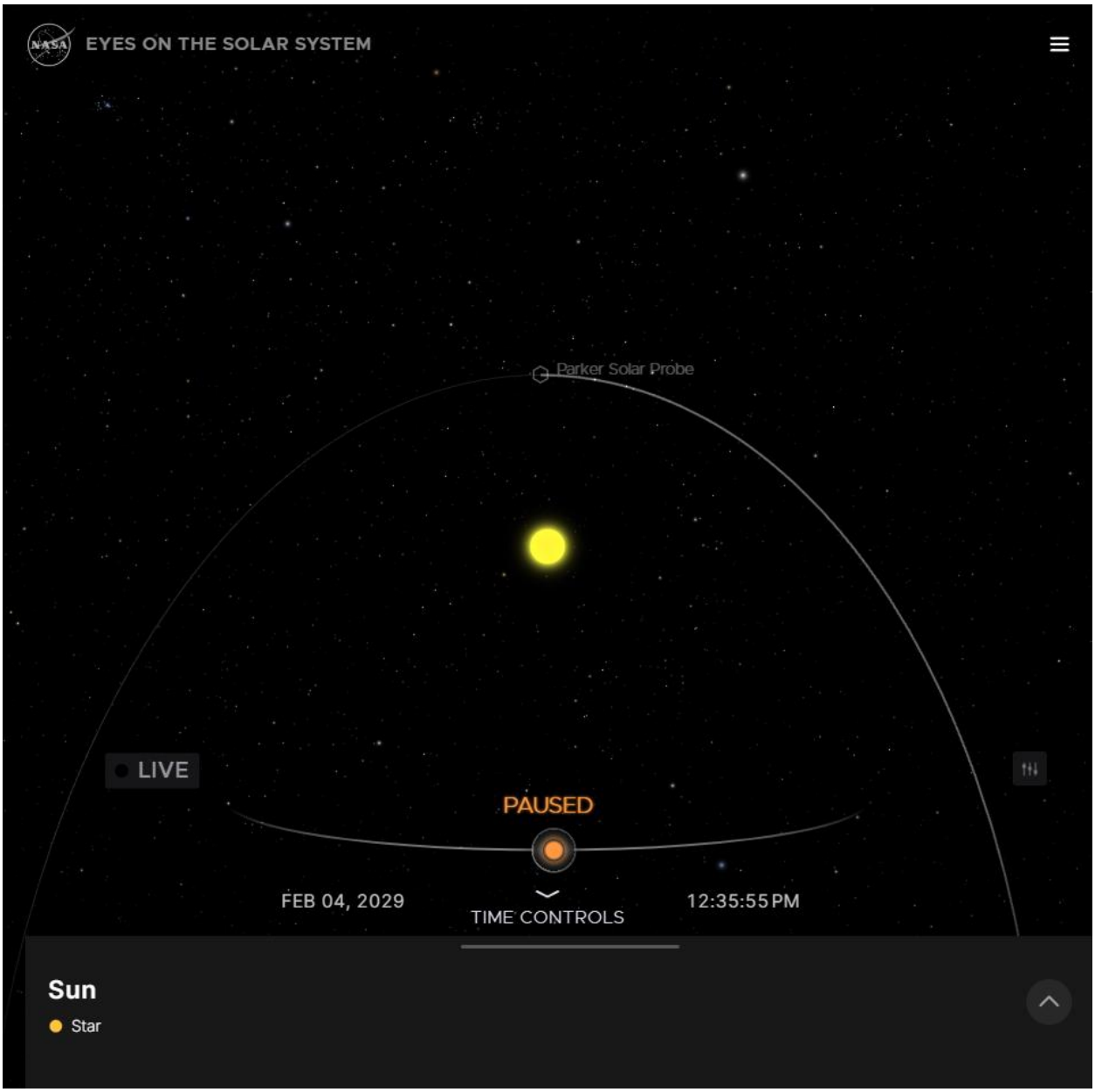
August 11th 2028 – 37th - No Data



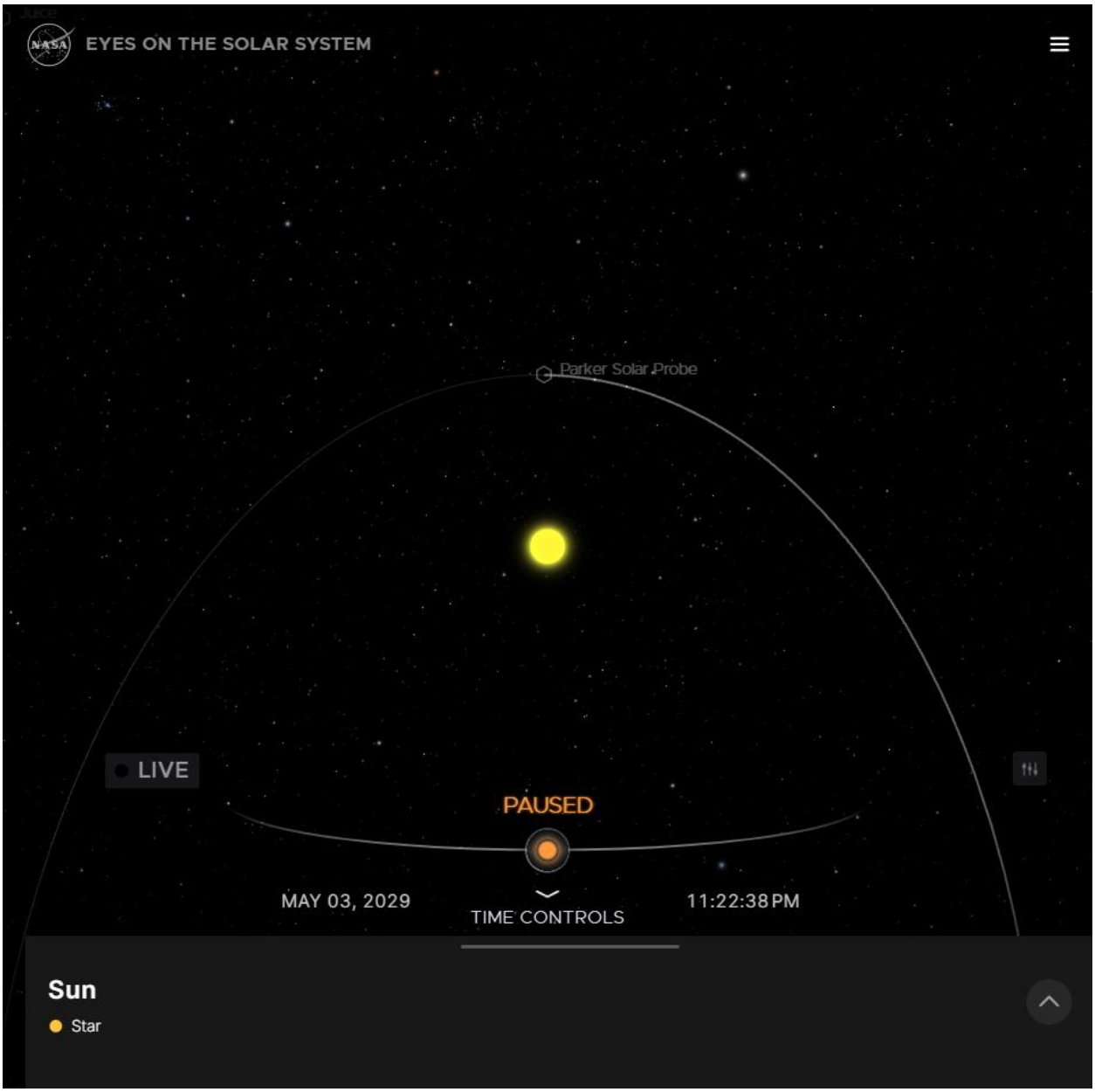
November 8th 2028 – 38th - No Data



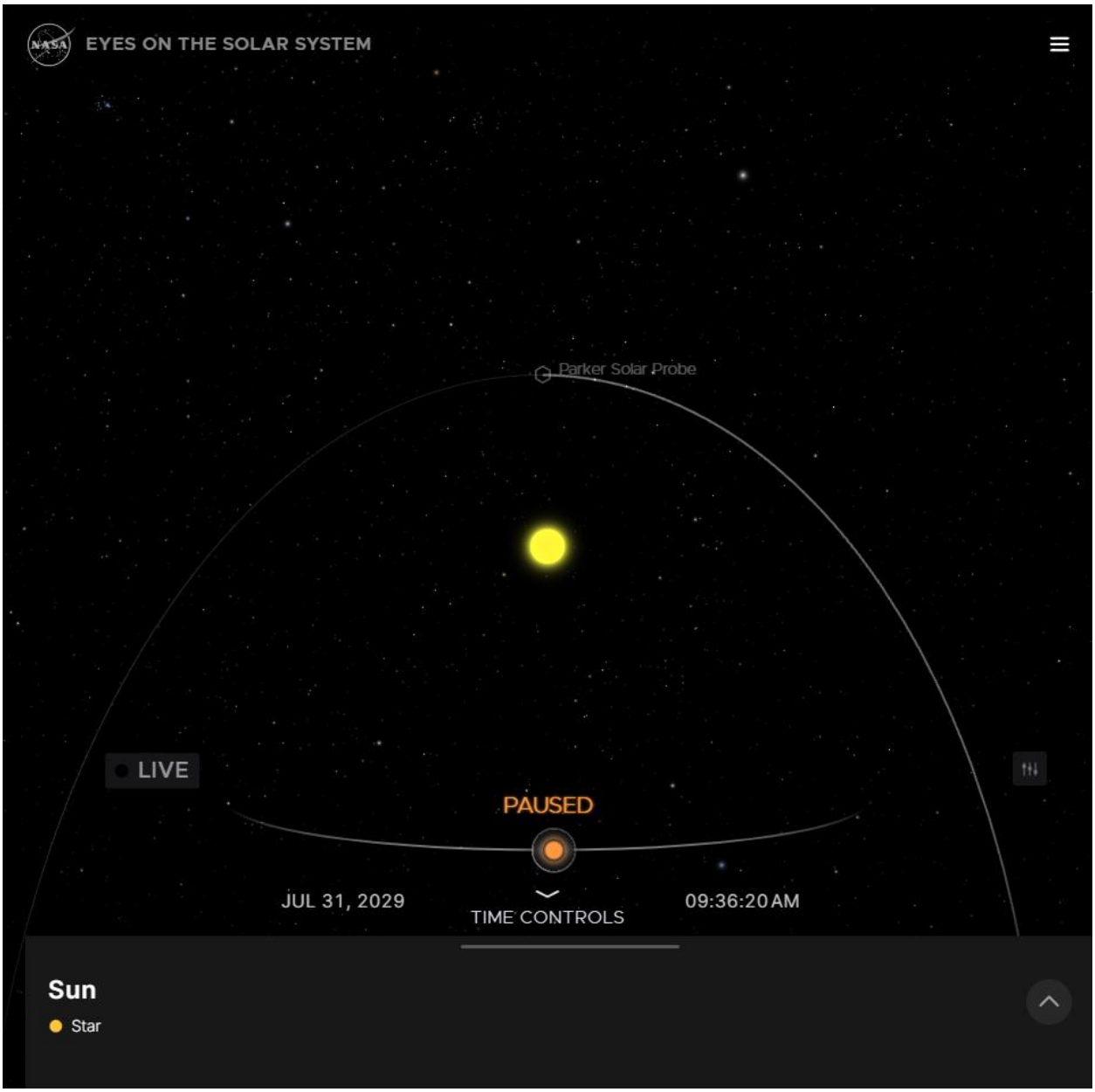
February 4th 2029 - 39th - No Data



May 3rd 2029 - 40th - No Data



July 31st 2029 - 41st - No Data



August 31st – MISSION END - No Data

41 Total Perihelion's for total MAX Perihelion:

180 Degrees

(2 days, 3 hours, 8 minutes, and 8 seconds)

Multiplied by 41 Passes

Thus, the total time is 87 days, 8 hours, 33 minutes, and 28 seconds.

OR

88 Days Orbit

***Parker Probe Grand Mission: To orbit the sun for every day of the year**

By: Jack M